

IN THE CLAIMS

Please cancel claims 1-21 without prejudice or disclaimer, and substitute new claims 22-42 therefor as follows:

Claims 1-21 (Cancelled).

22. (New) A method of reading passive tags in a radio-frequency identification system, wherein an interrogating station comprising an antenna array sends radio-frequency inquiry signals toward passive tags to be identified, and each tag associates information stored thereon with the received inquiry signal to form a response signal that is reflected toward the interrogating station and is processed therein, comprising detecting at the interrogating station an absolute value and a phase of each response signal received at each antenna in the array; submitting each received response signal to phase conjugation, thereby generating a respective phase-conjugated signal; and transmitting the phase conjugated signals back to the passive tags.

23. (New) The method according to claim 22, wherein an amplification of the signals to be transmitted back to the passive tags is performed at the interrogating station.

24. (New) The method according to claim 22, wherein the inquiry signal is a wide angle lobed signal.

25. (New) The method according to claim 22, wherein, for said tag tracking, after back transmission of a phase conjugated signal to a tag, a new response from the tag is waited for by the interrogating station, each new response signal is correlated with

the previous one and the operations of phase conjugation of the response signal, back-transmission of the phase-conjugated signal, reception of a new response signal, and correlation of each new response signal with the previous one are iteratively performed until the correlation reveals that the tag is stationary.

26. (New) The method according to claim 25, wherein, after detection of the stationary condition of a tag, the absolute value and the phase of the last received response signal are stored at the interrogating station to mark a steady tag position, and a check is performed on whether the stationary condition is maintained by periodically sending back to the tag the phase-conjugated signal relative to the stored position, the cycle of tag tracking being resumed whenever the tag response during the check of the stationary condition reveals a position variation.

27. (New) The method according to claim 26, wherein, in case the phase-conjugated signal periodically sent back to a tag fails to reach the tag, a search for the tag is effected by means of a spatial scanning of a space in which the tag is located, starting from the last recorded position of the tag.

28. (New) The method according to claim 22, wherein, for said tag tracking, the radio frequency inquiry signals are sent toward the tags through a spatial scanning of a space in which tags are located.

29. (New) The method according to claim 27, wherein, during spatial scanning, parameters characterising the response signals are recorded at the interrogating station, and phase conjugation is performed when a response signal is received at the interrogating station with parameters complying with the standards.

30. (New) The method according to claim 22, wherein the inquiry signal is a high-power short pulse.

31. (New) The method according to claim 30, wherein the power of the phase conjugated signal transmitted back to the tags is progressively decreased at each iteration during the tag tracking.

32. (New) An apparatus for reading passive tags in a radio frequency identification system comprising an interrogating station sending radio-frequency inquiry signals toward the passive tags and receiving from the tags response signals each consisting of an inquiry signal reflected toward the interrogating station after having been associated with information carried by a respective tag, the interrogating station comprising a control unit for controlling the transmission of the inquiry signals and for processing the response signals, the interrogating station comprising an antenna array controlled by the control unit and transmitting the inquiry signals and receiving the response signals, the control unit being arranged to detect and temporarily store an absolute value and a phase of each response signal received at each antenna of the array, and being connected with a phase conjugator submitting each received signal to phase conjugation to generate respective phase-conjugated signal and supplying the phase conjugated signals to a radio frequency generator connected to the antenna array, for back transmission of the phase conjugated signals to the passive tags.

33. (New) The apparatus according to claim 32, wherein the phase conjugator is arranged to amplify the signals to be transmitted back to the passive tags.

34. (New) The apparatus according to claim 32, wherein the control unit is adapted to control the radio frequency generator and the antenna array in order to cause the emission of a wide angle lobed signal forming the inquiry signal.

35. (New) The apparatus according to claim 32, wherein, for said tag tracking, the control unit is arranged, after the back transmission of a phase conjugated signal by the antenna array, to receive a new response from the concerned tag to correlate the new response with the previous one, and to iterate the operations of phase conjugation of the response signal, back-transmission of the phase conjugated signal, reception of a new response signal from a tag and correlation of each new response signal with the previous one until the correlation reveals that the tag has become stationary.

36. (New) The apparatus according to claim 35, wherein said processing unit is connected with a memory in which, after detection of the stationary condition of a tag, the absolute value and the phase of the response signal denoting such condition are stored to mark a steady position of the tag, said control unit being arranged to control the phase conjugator and the radio frequency generator so as to periodically transmit back to the tag the phase-conjugated signal relative to the stored position.

37. (New) The apparatus according to claim 35, wherein, in case the phase-conjugated signal periodically transmitted back to a tag fails to reach the tag, the control unit is arranged to start a search for the tag through a spatial scanning of a space in which the tag is located, starting from the last recorded position of the tag.

38. (New) The apparatus according to claim 36, wherein said control unit is arranged to resume the tag tracking whenever the tag response during the correlation reveals a position variation or when the tag is found during the spatial scanning.

39. (New) The apparatus according to claim 33, wherein, for said tag tracking, the control unit is arranged to control the radio frequency generator and the antenna array so as to effect a spatial scanning of a space in which the tags are located.

40. (New) The apparatus according to claim 37, wherein during said spatial scanning, the control unit is arranged to store parameters of the response signals from the individual tags and to control the phase conjugator so that phase conjugation is performed on the response signal received at the interrogating station with parameters complying with standards.

41. (New) The apparatus according to claim 32, wherein the control unit is arranged to control the radio frequency generator and the antenna array in order to cause the emission of a short, high-power pulse forming the inquiry signal.

42. (New) The apparatus according to claims 41, wherein the control unit is arranged to progressively decrease, at each iteration of the tag tracking cycle, the emission power of the phase-conjugated signals.